

News in Perspective

One effect of IBM's recent reorganization will be to strengthen its communications-oriented systems (page 148). Some observers speculate on a plan somewhere in the future for terminals with hundreds of thousands of bytes ...

What are Frank T. Cary's challenges as the new top man at IBM? They're not unlike those faced by T. Vincent Learson, although the style with which they're met will contrast with Learson's "action man" image. Page 151 ...

Although IBM aims its newest data entry system at overseas markets, perhaps the most attention the 3740 is getting is in the U.S. (page 152). In fact, IBM once considered marketing it here ...

California's first try at a "checkless society" began quietly on Oct. 16 (page 155). But it's an evolutionary process ...

What ever happened to Computer Output Microfilm (COM)? After two years of massive disinterest, dp users are taking another look. Page 166 ...

The New York Times' ambitious automated information bank has been something of a bomb (page 169). But optimism is still high for eventual implementation of an emasculated system.

Retail

Supermarkets Seek Systems Solutions to Profit Squeeze

A steady decline in net income with increased payroll expenses is causing supermarket executives to cast desperate, hungry eyes at automated check-out systems as a possible solution to their dilemma and to take steps themselves to adapt their operations to easy automation.

An industry report released last month showed that food retailers' net earnings in fiscal 1972 dropped to an all time low of 0.82% of sales, 5% below the year before and down 37% from six years ago. At the same time payroll expenses moved to an all time high of 11.4% of sales, up 5% from 1971. And chain stores throughout the country are wallowing in red ink.

Given limited ability to raise prices or cut labor rates, the markets are looking instead to cut labor requirements, and automation of their front-end operations (check-out stands) is an obvious answer.

But the supermarket business is complicated, and while point-of-sale systems for check stands have been a someday thing since the late sixties, to date only one supplier, Nuclear Data, Inc., of Palatine, Ill., has production systems installed. Numerous others are under test in stores.

"Most POS suppliers have zeroed in on department stores," said J. Roger Moody, vice president and general manager, retail systems division, of Nuclear Data, "because there are more cash registers out there and they're simpler." Moody says the average supermarket cash register has 10 times as many fixed characters as one in a department store.

And the average supermarket stocks some 10,000 different items out of 100,000 available to it, noted Gary Liebl, vice-president, marketing, of MSI Data Corp., Costa Mesa, Calif. MSI's ASTROS (Automatic Store Reporting and Operating System) is in a test installation at a Schnuck's store in St. Louis.

Most supermarket POS systems, whether they use keyboard entry or optical scanning, depend upon some kind of product coding to achieve top efficiency, and with 100,000 available

items, many involving multiple suppliers (producers, packagers, distributors), coding becomes a formidable problem.

First, a standard

It's a problem the grocery industry has chosen to tackle. An ad hoc committee of top management people representing all parts of the grocery manufacturing and distribution industries is working on development of a Universal Product Code which would be machine readable. Items would be source marked to save grocery chains the expensive, time-consuming task (roughly \$5 per thousand units) of either code or price marking items at the store level. And, of course, the UPC would greatly facilitate check-out automation.

The UPC standardization program is being financed by each of the top 20 supermarket chains, which have contributed a total of \$750,000, and by grocery product suppliers, who have contributed a total of \$250,000. Aim of the committee is selection of a universal symbol by March 30, 1973.

The symbol would be a 10-digit code with the first five digits identifying the product manufacturer/supplier and the second five, the specific item. Cost of source marking would run roughly 33¢ per 1,000 items, according to Larry Russell of McKinsey & Co., consultants to the UPC committee.

Prices would be kept inside a store's computerized cash register and would be referenced automatically when the UPC was read at the check-out counter. Russell said that once source marking is used for more than 50% of grocery product units having nonvariable weight (nationwide, \$5-17 million worth at any given time), the savings from elimination of in-store marking alone would be enough to justify cost of a computerized system. "I can see 10 to 20% of the units being source marked initially," he said.

Equipment suppliers were encouraged to develop and submit symbols for evaluation, and, at writing, seven were in — from Charecogn Systems; Singer Co.; RCA; Pitney Bowes-Alpex; IBM; Scanner, Inc.; and Litton/

Zellwager.

Some of the companies will put their symbols to laboratory tests. Some are conducting or will conduct store tests, and some will simply submit specifications. And some will do all three. Russell said the committee is prepared to receive submissions through March 29.

The laboratory test program was developed for the committee by Battelle Memorial Institute. Following draft of an initial test plan, participating companies were given an opportunity to suggest revisions. Actual tests started last month. Symbols are being tested in a controlled environment both for overall efficacy and to determine if a scanner actually exists which will read them as they are printed according to vendor print specifications. These specs could be a 50-page document, said Russell. Vendors who had signed up last month to participate in the lab test program, which means paying the costs of their own tests — approximately \$40,000 — were IBM, RCA, Singer, Pitney Bowes-Alpex, and Litton/Zellwager. Scanner, Inc., a small firm formed specifically to develop a scanner for this market, was considering it.

Bulls eye at Kroger's

RCA is testing its "bulls-eye" symbol in a Kroger's store in the Cincinnati area. It's a circular bar code that can be read omni-directionally around 360°. The test began in July when POS units were installed in five check stands over a three-week period. Bob Cottrell of Kroger is pleased. The store is operating with the five automated lanes where seven conventional lanes had been required, and "there has been a significant increase in throughput per check-out lane. He said customer reaction has been "very good, and there has been an increase in store sales, but I can't say for sure that this is a direct result of the system because other things have been happening in the marketplace too."

Kroger's already has some source marking through RCA's Banquet Foods subsidiary and its own coffee packaging plant but, for the most part, the bulls-eye symbols are applied at the store. For packaged goods priced by weight, they have a Hobart computer scale tied into their system which comes up with an appropriate bulls eye. There are things which can't be labeled, says Cottrell, like watermelon and cantaloupe, and those which would be impractical to label, like individual packages of gum and cigarettes. To these they assign a two-digit velocity code

which can be keyed in.

The Kroger system uses a fixed-slot scanner, imbedded in the conveyor belt, and is based on a dual mini-processor for redundancy. Cottrell couldn't comment on any potential expanded use of the system in its 1,355 stores in 22 states. "RCA hasn't even made a decision on production yet. A lot depends upon what happens next year with the UPC."

In another in-store test of a scanning system, the supplier is committed to the market no matter what happens with UPC. "We're interested in the UPC idea, but we haven't submitted our symbol," said George Ettelson of Dymo Industries Inc., Emeryville, Calif., which,



USING this voice-activated supermarket check-out system (VACS) developed by Threshold Technology, Inc., a checker can bag and input price and product data at the same time. The counter-top screen assures customers the right data is going in.



NATIONAL SEMICONDUCTOR'S Datachecker, in use in El Rancho Market, Huntington Beach, Calif., was designed to functional specifications developed by Certified Grocers, Inc., a cooperative organization of small grocery chains.

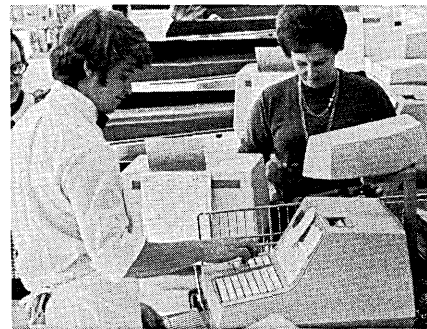
in late September began installation of a complete point-of-sale system for a Safeway store in Alamo, Calif. Full-store conversion was completed by mid-October, and Creighton Peet, a Safeway vp, said at that time it was too early to make an evaluation, "but the checkers think it's great." This is Safe-

way's first test of a system using scanning. The company ran a test in a Fremont, Calif., store with IBM in 1969, but that was a manual entry system and the test was run mainly to determine consumer reaction. It was positive, Peet said.

Peet believes "you have to have scanning" for a supermarket POS system to be really effective, and "it's practical even if labeling is done at the store level; though, of course, it would be more practical with universal symbol source labeling."

Label and scan

The Dymo system uses a hand-held scanner. A lightweight, hand-held label-



SCHNUCK'S market checker keys in a grocery order on an MSI Data Corp. ASTROS system. The larger keyboard on the right is for high-volume items which can be entered via a single key. The display screen on top, pointed towards the customer, shows her what she's getting and for how much.

er is used to print and apply a bar-coded, pressure sensitive label to each item. Dymo is a producer of embossing tools, metal price markers, and hand-held price markers for supermarkets. As with the RCA system, provision has been made for velocity-coded keyboard entry for items it would be impractical to label.

The Dymo system is based on a mini-computer the firm developed, and whether systems will contain one or two "will depend on the store's operating philosophy," said Dr. Bill Mullen of the Dymo technical center, "but I suspect most will want two."

The system has no price tag yet. Dr. Mullen said he believes the test will go on for five months. "The first two months will have to be shake-down, getting out the bugs and overcoming the curiosity factor."

All POS systems offered to the supermarket field, in addition to streamlining check-stand operations, produce a variety of management reports on things like inventory, sales rates, and checker productivity; and, while emphasis in the industry seems to be on

check-stand speed-up, these are important too.

One test, in a Lucky supermarket in San Leandro, Calif., was stopped after three days because the store wasn't getting the reports it wanted. Ken Cope of Lucky said the Pitney Bowes-Alpex system would be reinstalled "once the software problems are worked out." A similar system in test at a Chatham Complete Food Centers store in the Detroit area was "performing well" last month, and Chatham is committed to install systems in 15 more stores next year.

"The terminals were working fine," said Cope of the Lucky system. This is a keyboard entry system which will lend itself to use of scanning "when its time comes."

And the leader in the supermarket POS field is ready for that time too. Nuclear Data's Moody said his firm's systems, which now use keyboard entry, can accommodate either a hand-held wand or a fixed scanner and can handle any scanning rate. Moody believes universal source marking, and with it widespread use of scanning, "will come to pass, but it's a little presumptuous to think we will have it by next year." Nuclear Data won't develop its own scanner. "The winning scanner will have to either be oem'd or offered on a licensing basis, so we'll just sit back and wait to see who wins."

Pay backs in a year

Moody sees scanning as "simply an addition" to a supermarket POS system. "You're always going to have to have minis, communications lines, cash drawers, and keyboards." Nuclear Data's systems are based on their own ND 812 minis, and they use three for every store. For a 10-terminal store with three minis, all interfaces, disc file, and program license, a system would cost \$45,000. "The larger the store, the bigger the savings," said Moody, "but our customers have been experiencing complete pay back (recovery of system cost) in from three-quarters to a year and a half." He said it would take sales of \$25,000 a week to justify a system, and most of their customers do more than this.

Nuclear Data's first installation was in a Jewel store in September 1971. At the end of this September it had installations in 30 Jewel stores and was installing in 12 more in October. Also last month, Nuclear Data shipped systems

to Dominick's in Chicago; Stop & Shop, Boston; Weingarten's, Houston; Wegman's, Rochester, N.Y.; and Acme, Philadelphia.

Acme also is talking about a possible in-store test of a system with Litton/Zellwager, a joint venture of Litton Industries and Zellwager which has in-store tests going in Switzerland.

The Schnuck's test store for MSI's ASTROS was a brand new store with seven check stands which, after 10 days of operation, was doing \$100,000 per week in sales. A second system was to be installed in an older store this month. Doug Brookings of Schnuck's said his company, in deciding to go to point of sale, was trying a whole new concept of front-end operation. The experiment, at writing, was too new to evaluate, but Brookings said "so far it's up to expectations." He said the reason Schnuck's decided on MSI was "MSI had a system today that met our needs today and has the ability to grow as technology grows, into scanning and other areas."

"When the time comes"

MSI tested its system for five months at an Alexander's market in Los Angeles and in-house in a mock store before that. MSI's principal product is a portable data entry unit for which 86% of sales currently are to supermarkets. MSI president Bill Bowers said his firm spent one year just trying to determine what tangible benefits a supermarket POS system should offer to customers.

Like the Nuclear Data systems, ASTROS is based on keyboard entry, and Bowers, like Moody, feels universal source coding is a few years away; but ASTROS can accommodate scanners "when the time comes." The MSI test systems have used a Computer Automation Alpha 15 mini, but when the system gets into production, the company will develop and build its own.

The system has a electronic scale attachment that weighs produce and records the price automatically. Its display shows product name, price, and weight. The computer stores check-cashing information so checks can be verified automatically at the stand, in minimum time. Registers have automatic checkwriters into which customers insert their checks after the checker has keyed in the amount (either purchase price or more) and the unit fills in the rest, including endorsing information. All the customer has to do is sign

and pick up change, if any. A variety of versions of ASTROS will be priced from \$30,000 to \$60,000 when the system is in production.

A system that already is, offered by a company which expected to be No. 2 behind Nuclear Data after the first of this month when its first production system was to be installed, is called Data-checker. Produced by National Semiconductor, Santa Clara, Calif., its price runs roughly \$30,000 for an eight-terminal system with two minis.

The first production system will go into an El Rancho market in Huntington Beach, replacing a test system which was National Semiconductor's first. El Rancho is a member of Certified Grocers, an organization of smaller grocery chains. Certified had studied POS for several years and developed a functional description of what was needed. The organization approached National Semiconductor, and, said Tom Anthony, director of marketing for the POS system, "we put our technology together with their description and came up with the Datachecker."

Anthony said the test system utilized a basic processor with conventional medium-scale integration (MSI), but the production versions feature dual processors built around five large-scale integration (LSI) chips which afford low price and high reliability, and "the processors were designed specifically for the supermarket application."

National is involved in a joint venture with Scanner, Inc., through which it will produce scanners to Scanner's functional specifications. It expects to offer these early in 1973 and to be in volume production by next summer.

National will install its second production system in an Alpha Beta market in Irvine, Calif., this month and is planning installation of five more production systems by the end of the year.

Then there's a system that doesn't depend on coding or scanning and probably couldn't care less if a UPC is adopted but might be adversely affected by a checker with a bad cold. It's VACS, the Voice Activated Checkout System (see July, p. 102), developed by Threshold Technology, Cinnaminson, N.J. The company's first market test system last month went into one check stand in one Southern New Jersey market of a large chain headquartered in Philadelphia. If that works out, said TT's Michael Nye, the store will install systems in all of its 14 check lanes, and ultimately, he hopes, it will be installed chain wide.

Input for this system is via a micro-

phone the checker wears, similar to those used by telephone operators. The checker verbally identifies items and prices and bags groceries at the same time. Key to the system, said Nye, "is our preprocessor which breaks down speech characteristics into digital signals." An eight-station system would have eight preprocessors and one mini. The preprocessors are TT's, and the

mini, a Nova 1200. Price of a system will range from \$65,000 to \$75,000.

And it might pose a problem for a checker who likes to chat with customers. Could this conversation ring up a package of cigarettes?

Customer: "It's a nice day."

Checker: "True."

—Edith Myers

Companies

IBM Regrouped — What Now?

Will Frank T. Cary's ascendency to the chairmanship of IBM mean a "new face" for the giant? What does the reorganization of the Data Processing Products Group — one of the last legacies of T. Vincent Learson's regime — mean to IBM's direction? The industry mused when the announcements of change were made in September.

The questions themselves provide one answer. Although the new chair-

man of the board will undoubtedly put his personal stamp on the organization, the wheels for change have been in motion for years, and Cary has long been in a position to direct them.

In that context, the reorganization holds more immediate interest for the IBM customer and competition. IBM has created new divisions to replace the former Components, Systems Development and Systems Manufacturing Divisions. They include the System (without an "s") Development Div., "responsible for the systems definition, architecture, and systems management of IBM's principal computer product lines and for systems programming. It

will also develop and manufacture communications products, terminals, and displays." As with the previous SDD, Bob. O. Evans is president.

The new System Products Div. is responsible for the "development and manufacture of central processor products, including main storage, logic circuitry, channels and cables." Theodore C. Papes, Jr., is president.

The General Products Div. is responsible for the "development and manufacture of computer tape units, disc files, and printers," and is headed by Dr. Arthur G. Anderson.

Response to changes

IBM explains the move as a "response to changes brought about by fast-moving technologies and the evolving needs of the marketplace." The new System Development Div: (SDD) is a unification of "systems architecture and systems management ... to preserve systems integrity, while giving individual business units full responsibility for engineering and manufacturing a particular product — from the drawing board to the loading dock."

SDD obviously is the power behind IBM's technological future, and reflects many things about its possible direc-

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